

1 What is claimed is:

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3 1. A washing machine comprising:

4 a housing;

5 a tub installed in the housing to store water, the tub having at least one opening and at

6 least one pipe connected to the at least one opening;

7 a drum rotatably installed in the tub to hold a laundry therein for washing; and

8 a valve assembly installed at the opening to selectively cut off the at least one pipe to

9 prevent foam produced in the drum and the tub from leaking outside via the opening.

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11 2. The washing machine as claimed in claim 1, wherein the at least one opening

12 and the at least one pipe are an inlet opening for supplying the water to the tub from an

13 external water supply source and an inlet pipe connected to the inlet opening, respectively.

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15 3. The washing machine as claimed in claim 1, wherein the at least one opening

16 and the at least one pipe are a ventilation opening for allowing an external air to flow in the

17 tub and a ventilation pipe connected to the ventilation opening, respectively.

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19 4. The washing machine as claimed in claim 1, wherein the valve assembly

20 comprises a valve installed in the opening to float on the foam.

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22 5. The washing machine as claimed in claim 1, wherein the valve assembly

23 further comprises a guide formed in the opening to guide a movement of the valve.

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25 6. The washing machine as claimed in claim 1, wherein the valve assembly is
26 formed at the opening to be installed in an extension pipe connected to the at least one pipe.
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28 7. The washing machine as claimed in claim 4, wherein the valve is smaller
29 than the opening and is greater than a diameter of the pipe.
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31 8. The washing machine as claimed in claim 1, wherein the pipe has a pipe
32 diameter partially reduced in the vicinity of the opening to be stably cut off by the valve
33 assembly.
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35 9. The washing machine as claimed in claim 1, wherein the pipe comprises a rib
36 extending inward from an inner circumference.
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38 10. The washing machine as claimed in claim 1, wherein the pipe is a corrugated
39 or bellows pipe having a multitude of folds.
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41 11. The washing machine as claimed in claim 4 or claim 5, wherein the valve
42 comprises a floating body having a concave surface.
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44 12. The washing machine as claimed in claim 5, wherein the valve comprises a
45 shaft part extending from a bottom of the floating body to be guided by the guide.
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47 13. The washing machine as claimed in claim 11, wherein the floating body is a
48 semi-spherical shell.

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50 14. The washing machine as claimed in claim 11, wherein the floating body
51 further comprises a flange horizontally extending from an edge.

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53 15. The washing machine as claimed in claim 12, wherein the shaft part is a
54 hollow shaft.

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56 16. The washing machine as claimed in claim 12, the guide comprising:
57 a hub holding the shaft part movably to support the bottom of the floating body; and
58 a plurality of ribs extending between an outer circumference of the hub and an inner
59 circumference of the opening.

60
61 17. The washing machine as claimed in claim 16, wherein each of the ribs is
62 uniform in height in the vicinity of the inner circumference of the opening but gradually
63 increases in height in the vicinity of the outer circumference of the hub.

64
65 18. The washing machine as claimed in claim 12, wherein the valve further
66 comprises a first elastic member provided on an outer circumference of the shaft part to lie
67 between the guide and the floating body.

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69 19. The washing machine as claimed in claim 18, wherein a buffer protrusion is
70 formed at a lower end of the first elastic member.

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72 20. The washing machine as claimed in claim 12, wherein an outer

73 circumference of the shaft part is covered with a second elastic member.
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75 21. The washing machine as claimed in claim 18 or claim 20, wherein the first
76 elastic member is built in one body of the second elastic member.
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78 22. The washing machine as claimed in claim 16, wherein an inner
79 circumference of the hub is tapered by a predetermined angle.
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81 23. The washing machine as claimed in claim 16, wherein an inside diameter of
82 the hub gradually increases.
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84 24. The washing machine as claimed in claim 16, wherein an inside diameter of
85 the hub gradually increases toward a top.
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87 25. The washing machine as claimed in claim 16, wherein an outside diameter of
88 the shaft part gradually increases to be brought contact with an inside diameter of the hub.
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90 26. The washing machine as claimed in claim 16, wherein an outside diameter of
91 the shaft part gradually increases toward a top.
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93 27. The washing machine as claimed in claim 4 or claim 5, wherein the valve
94 assembly further comprises a plate member installed under the valve to cut off the opening
95 partially.
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97 28. The washing machine as claimed in claim 27, wherein the plate member is a
98 disc type.

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100 29. The washing machine as claimed in claim 27, wherein a size of the plate
101 member is equal to or greater than a cross-section of a lower end of the valve.

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103 30. The washing machine as claimed in claim 27, the plate member comprising:
104 at least one leg extending vertically from a bottom; and
105 a hook provided at a tip of the leg to be caught on a portion of the guide.